NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

PEST MANAGEMENT

(Acre)

CODE 595

DEFINITION

Utilizing environmentally sensitive prevention, avoidance, monitoring and suppression strategies, to manage weeds, insects, diseases, animals and other organisms (including invasive and non-invasive species), that directly or indirectly cause damage or annoyance.

PURPOSES

This practice is applied as part of a Resource Management System (RMS) to support one or more of the following purposes:

Enhance quantity and quality of commodities.

Minimize negative impacts of pest control on soil resources, water resources, air resources, plant resources, animal resources and/or humans.

CONDITIONS WHERE PRACTICE APPLIES

Wherever pests will be managed.

CRITERIA

General Criteria Applicable to All Purposes

Pest management activities shall comply with all applicable, Federal, State and local laws and regulations, including, management plans for invasive pest species, noxious weeds and disease vectors. Pest management plans shall be compatible with other components of a conservation plan and include appropriate mitigation techniques to reduce environmental risk.

Compliance with the Food Quality Protection Act (FQPA); Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); Worker Protection Standard (WPS); and Interim Endangered Species Protection Program (H7506C) is required for chemical pest control.

Persons who design, install and checkout this practice shall be certified through Technical Service Provider Registry (TechReg http://techreg.usda.gov/) or according to the General Manual PART 409 - Conservation Planning Policy, 409.11 Minimum Standards for Providers of Conservation Technical Assistance Associated with Conservation Planning that includes Pest Management (http://policy.nrcs.usda.gov/scripts/lpsiis.dll/GM/GM_180_409_11.htm) requirements. Field Office Staff who plan and review this practice must have appropriate Agronomic Practice Job Approval Authority for Pest Management.

Pesticide applications shall be made according to label instructions and University of Nebraska recommendations. Applications made through irrigation systems will follow state and local laws and regulations including Chemigation requirements administered by the Natural Resources District.

Integrated Pest Management (IPM) strategies shall be incorporated into the planning process. IPM will utilize the most appropriate combination of biological, cultural and chemical methods. All chemical methods of control shall utilize economic thresholds to determine if control measures will be economically beneficial, address efficacy, and minimize environmental risk.

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Refer to University of Nebraska publications for guidance on crop specific IPM strategies. When crop specific strategies are not available, use the following general IPM principles to maintain pest populations below economic levels and to minimize pest resistance and adverse effects of pesticides on human health, and the environment.

Prevention i.e. use of pest-free seeds and transplants, cleaning tillage and harvesting equipment between fields, and appropriate cultural practices.

Avoidance includes the use of pest resistant crop varieties, transgenic crops, crop rotations, pesticide rotation, trap crops for pests, planting dates, nutrient and water management, and other cultural options to prevent pest from reaching economically damaging levels.

Monitoring includes pest scouting, crop monitoring, soil testing for nutrient, soil water monitoring, and weather monitoring to target suppression activities at the appropriate time and ensure that pesticide applications are based on economic thresholds. Monitoring is also utilized to ensure that cultural and biological techniques are appropriate as well.

Suppression includes cultural biological and chemical controls to manage pest populations at an economic level. When appropriate utilize non-chemical options such as mechanical-cultural methods, including cultivation and early harvest and/or biological controls. Refer to University of Nebraska publications for guidance.

All methods of pest management must be integrated with other components of the conservation plan.

Clients shall be instructed to pay special attention to all environmental hazards and site-specific application criteria listed on pesticide labels and contained in Extension and Crop Consultant recommendations.

Additional Criteria to Protect Quantity and Quality of Commodities

As an essential component of both commodity-specific IPM and IPM general principles, clients' shall use the minimum level of pest control necessary to meet their objectives for commodity quantity and quality. All appropriate state federal and local standards to protect against contamination with transgenic crops, noxious weeds, etc., will be followed. Organic crops will comply with applicable local, state or federal standards, as well.

Additional Criteria to Protect Soil Resources

In conjunction with other conservation practices, the number, sequence and timing of tillage operations shall be managed to maintain soil quality and maintain soil loss at or below the soil loss tolerance (T) or any other planned soil loss objective. Current erosion prediction technology in Section I of the Field Office Technical Guide and Quality Criteria in Section III shall be used to evaluate erosion potential for wind, water and concentrated flow erosion.

Pesticides will be applied according to label instructions, including precautionary statements, to limit soil pesticide residues and negative effects on future crops or non-target plants/crops, animals and humans. Clients shall be encouraged to pay special attention to pesticide label instructions for limiting pesticide residues in soil that may negatively impact non-target plants, animals and humans.

Additional Criteria to Protect Water Resources

Pesticide applications shall be made according to label instructions, including precautionary statements regarding water resources to limit leaching and runoff losses of pesticide residues.

The potential loss of pesticides to surface and groundwater and the negative impacts to humans, plants and animals will be evaluated using the NRCS Windows Pesticide Screening Tool (WIN-PST) (The University of Nebraska Weedsoft Program can be substituted for leaching loss potential when runoff solution/adsorbed is not a concern on the site).

If WIN-PST evaluation (soil-pesticide interaction ranking) has an **Extra High**, **High**, or **Intermediate** loss potential (leaching solution runoff or adsorbed runoff) and the human and fish hazard is intermediate or higher appropriate mitigation measures and conservation practices will be implemented (refer to mitigation guidance that follows). If WIN-PST evaluation has a low or very low loss potential, no additional mitigation measures are required. The mitigation measures planned must not already be accounted for in the risk assessment.

Mitigation For Pesticide Losses to protect water resources:

An appropriate set of mitigation techniques must be planned and implemented to reduce the environmental risks to surface and ground water due to pest management activities in accordance with water quality criteria in Section III of the Field Office Technical Guide. Mitigation techniques listed in Appendix A "Mitigation Effectiveness Guide" include Conservation Practices such as, Filter Strips; Conservation Crop Rotations; and various pesticide management techniques.

Mitigation measures must be appropriate for the pesticide loss pathway on the site. These include leaching and surface loss due to erosion and/or runoff. Pesticide loss occurs by detachment and transport of pesticides adsorbed to sediment or in solution. Transport due to water erosion and runoff can occur in sheet flow or concentrated flow.

Refer to Table 1 for the minimum number of mitigation measures and Appendix A "Mitigation Effectiveness Guide" for a list of mitigation measures. Mitigation measures include both pesticide management measures and conservation practices that are appropriate to mitigate potential pesticide loss for the pathway(s) of concern. Mitigation will be needed for all three pathways (leaching solution runoff and adsorbed runoff) if loss potential is Intermediate or higher.

[1]Table 1 Additional Mitigation Measures (measures not accounted for in WIN-PST)

Loss Potential (Leaching, Solution Runoff, and Adsorbed Runoff	Mitigation Measures including [2]Pesticide Management Techniques and [3]Conservation Practices (+ or ++ measures)
Intermediate	2 or more
High	3 or more
Very High	4 or more

Pesticide applications associated with irrigation systems shall be applied in accordance with the requirements of Irrigation Water Management (449).

When sediment loading is a surface water resource concern, soil erosion will be to T (tolerable soil loss for soil map unit) or lower based on water quality goals of the receiving water body. The number, sequence and timing of tillage operations shall be managed in conjunction with other sediment control tactics and practices, in order to achieve surface water quality goals of the receiving water bodies.

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[1] Conservation Practices and pesticide management techniques must be appropriate for each pesticide loss pathway(s) applicable on the site. Mitigation measures that eliminate use of pesticides or are rated with three pluses (+++) are adequate as stand alone measures for the pathway(s) of concern.

[2] Pesticide management measures must be included in the integrated pest management plan/jobsheets used to document practice implementation. At least one mitigation measure must be from this category.

[3] Conservation practices must be included in the Conservation Plan for the field(s)/site(s).

Additional Criteria to Protect Air Resources

Pesticide applications shall be made according to label instructions including precautionary statements and University of Nebraska recommendations regarding air resources to minimize volatilization and drift and transport through wind erosion that may negatively impact non-target plants, animals and humans. Method of application and pesticide formulation shall be appropriate for the conditions and consistent with pesticide label requirements. Wind speed, temperature, humidity and other climatic factors will be monitored as applicable on pesticide label instructions. Refer to Appendix A for mitigation measures that are effective at minimizing wind erosion.

Additional Criteria to Protect Plant Resources

Clients shall adhere to pesticide label instructions including precautionary statements and University of Nebraska recommendations to avoid negative impacts on non-target plants including those directed at:

Preventing misdirected pest management control measures that negatively impact non-target plants (e.g., removing pesticide residues from sprayers before moving to the next crop and properly adjusting cultivators preventing chemical drift).

Appropriate climatic conditions, crop stage, soil moisture, pH, and organic matter in order to protect plant health.

Limiting pesticide residues in soil that can carry over and harm subsequent crops.

Pesticide applications that may impact endangered plant species will be avoided. When endangered species may be impacted, pesticide applicators shall consult their county's Endangered Species Program bulletins for recommendations concerning pesticides and endangered species. Refer to EPA's Endangered Species Program and county bulletins http://www.epa.gov/espp/nebraska/nebraska.htm

Additional Criteria to Protect Animal Resources

Clients shall adhere to pesticide label instructions, including precautionary statements and University of Nebraska recommendations regarding grazing and haying restrictions and other items necessary to minimize negative impacts to wildlife and domestic animals.

Pesticide applications that impact endangered plant species will be avoided. When endangered species may be impacted, pesticide applicators shall consult their county's Endangered Species Program bulletins for recommendations concerning pesticides and endangered species. Refer to EPA's Endangered Species Program and county bulletins http://www.epa.gov/espp/nebraska/nebraska.htm

Additional Criteria to Protect Humans

Pesticide applications shall be made according to local, state and federal regulations, label instructions, including precautionary statements and University of Nebraska recommendations to minimize negative impacts to humans including those directed at:

Re-entry intervals (REIs) for fields treated with pesticides.

Proper storage, handling and disposal of pesticide containers.

Proper protection to avoid back-siphoning into water wells from sprayer tanks.

Proper protection to avoid back-siphoning of chemigation equipment into the irrigation water source.

Use of proper protective clothing and equipment during mixing/handling and application.

Instructions for complying with the Worker Protection Standard.

Pesticide applicators shall take Private or Commercial Pesticide Applicators Training offered by the Nebraska Department of Agriculture. Persons purchasing or applying "restricted use" pesticides are required to take this training and be certified with the Nebraska Department of Agriculture.

Considerations

The following IPM principles should be considered when appropriate:

Agronomic/management measures that will reduce plant stress, improve plant vigor will

increase the plant's overall ability to tolerate pests. These measures include; adequate plant nutrients and soil amendments, residue management that optimizes soil moisture, proper soil conditions (compaction and tilth), proper irrigation management on irrigated land, and other measures that optimize plant vigor.

When necessary to use chemical controls consider efficacy, and pesticide characteristics such as solubility, toxicity, degradation products, mobility, persistence, adsorption and relationships to site characteristics such as soil, geology, depth to water tables and proximity to surface water. Consider slope, climate, other site conditions, and sensitive areas to determine the potential impact on water quality.

Consider present soil moisture, anticipated weather conditions, and irrigation plans to achieve the greatest efficacy and reduce potential for offsite transport.

Consider using banded or spot treatment of pests where appropriate to reduce costs and environmental risk.

Consider using hand weeding/roguing where appropriate.

All pesticide users are encouraged to obtain training to become certified in pesticide application even if they do not apply restricted use pesticides.

Consider recycling containers at pesticide waste collection sites.

Consider method of pesticide application such as ground or aerial spraying, chemigation, wicking, application of granules, etc., since the degree of drift and volatilization will vary considerably by method.

PLANS AND SPECIFICATIONS

Plans and specifications plan shall be prepared in accordance with the criteria of this standard and shall describe the requirements for applying the practice to achieve its intended purpose(s).

Specifications for this practice shall be recorded on approved specification sheets, job sheets and as described in the Statement of Work (595SOW) for this practice.

As a minimum, the pest management component of a conservation plan shall include:

- ✓ State of Purpose/Goals/Objectives of implementing pest management.
- ✓ Conservation Plan Map
- ✓ Soils map and the pesticide leaching and runoff potential of each soil map unit.
- ✓ Description of pest management.
- ✓ Location of sensitive areas such as streams, wetlands or other areas and setbacks, if applicable.
- ✓ Description of record keeping and documentation requirements (refer to 595 Statement of Work and section below).

Recordkeeping/Other Requirements

- ✓ All records must be kept for at least three years or longer if required by local, state, or federal regulations.
- ✓ Restricted use pesticide application recordkeeping requirements and any additional records required by federal, state or local laws and regulations for pesticide application.
- ✓ Restricted use pesticide records must include the following:
    - o Brand/product name
    - o EPA registration number
    - o Total amount of RUP applied
    - o Crop/site treated
    - o Field location
    - o Acres treated
    - o Application date
    - o Name of certified applicator
    - o Certification number
- ✓ Records of pests being treated, pesticides applied, sketch or map of area being treated, and all IPM activities including all pesticide record keeping (NE-CPA-29 or NE-CPA-39).

- ✓ Economic threshold for pesticide treatment including scouting notes, WEEDSOFT printout, or other justification for pesticide treatments.
- ✓ Cultural, biological and chemical methods to be utilized to control pests according to IPM guidance in this standard.
- ✓ WIN-PST analysis of leaching and runoff potential of pesticides or WEEDSOFT analysis of leaching to document criteria used and interpretation of the environmental risk when chemical controls are used. Risk ratings are divided into 5 classes as follows:
    - o X –Extra High
    - o H – High
    - o I - Intermediate
    - o L – Low
    - o VL – Very Low
- ✓ Mitigation measures utilized to reduce risk of pesticide loss according to criteria in this standard to protect water resources (refer to Appendix A and Table 1 in this standard for requirements.)
- ✓ Operation and maintenance requirements according the Operation and Maintenance Section that follows.

Operation and Maintenance

The pest management component of a conservation plan shall include appropriate operation and maintenance items for the client. These include:

Review and update the plan periodically in order to incorporate new IPM technology, respond to cropping system and pest complex changes, and avoid the development of pest resistance.

Maintain mitigation techniques identified in the plan in order to ensure continued effectiveness.

Develop a safety plan for individuals exposed to chemicals, including telephone numbers and addresses of emergency treatment centers for individuals exposed to chemicals and the telephone number for the nearest poison control center.

NON-EMERGENCY CONTACT INFORMATION

The National Pesticide Information Center (NPIC) telephone number in Corvallis, Oregon may also be given for non-emergency information:

1-800-858-7384

Monday - Friday

6:30 a.m. to 4:30 p.m. Pacific Time

Chemtrec (Center for Non-Emergency Services)

1-800-262-8200

EMERGENCY CONTACT INFORMATION

For advice and assistance with emergency spills and other emergencies that involve pesticides, use the following phone numbers:

Involving human health/injury:

911

Poison Control Center number in Nebraska:

1-800-222-1222

or 1-800-955-9119 (Omaha)

Spills:

Involving roads or right of ways: Nebraska State Patrol:

1-800-525-5555

All other spills: Nebraska Department of Environmental Quality

877-253-2603 during workweek hours, or 402-471-4545 during weekends or after hours

The national 24-hour CHEMTREC telephone number for Pesticide spills, leaks and fires:

1-800-424-9300

Follow label requirements for mixing/loading setbacks from wells, intermittent streams and rivers, natural or impounded ponds and lakes, or reservoirs.

Prevent back-siphoning of pesticide mixture into water supply. When adding water to spray tanks,

keep air space between water supply hose and spray tank.

When chemigating, user must obtain necessary permits from the local Natural Resources District. All chemigation systems must be equipped with the appropriate safety equipment to prevent backflow of chemicals into the water source. Pesticides used in chemigation shall be labeled for this method of application.

Post signs according to label directions and/or Federal, State, and local laws around sites that have been treated and pesticide storage areas. Follow restricted entry intervals.

Dispose of pesticides and pesticide containers in accordance with label directions and adhere to Federal, State, and local regulations.

Pesticides shall be stored in original labeled containers according to label requirements.

Read and follow label directions and maintain appropriate Material Safety Data Sheets (MSDS). http://www.greenbook.net/search/QuickSearch/

Calibrate application equipment according to University of Nebraska Cooperative Extension guidelines and/or manufacturer recommendations before each seasonal use and with each major chemical change.

Replace worn nozzle tips, cracked hoses, and faulty gauges.

Accurately measure and mix all pesticides. Mix only the amount needed to eliminate storing and disposing of excess. Triple rinse pesticide containers and empty the water used to rinse pesticide containers into the spray tank.

Dispose of leftover pesticides and container according to label requirements and never reuse them for other purposes. Return unopened pesticides to the supplier.

Maintain records of pest management for at least three years. All pesticide application records shall be in accordance with Nebraska Department of Agriculture requirements and USDA Agricultural Marketing Service's Pesticide Record Keeping Program and state specific requirements.

The Pesticide user must be fully trained and must obtain pesticide applicator certification to apply restricted use pesticides in Nebraska. Information on obtaining this permit may be obtained from the Nebraska Department of Agriculture or local Cooperative Extension Service.

Refer to plans and specifications section of this standard and practice documentation guide for detailed guidance on record-keeping requirements.

REFERENCES

Refer to the following references for IPM and other pest management guidance:

C & P Press Product Labels and MSDA sheets: http://www.greenbook.net/search/QuickSearch/

University of Nebraska Pest Management Publications (only): http://ianrpubs.unl.edu/pesticides/index.htm

All University of Nebraska NebGuides and Extension Circulars, including those on pest management, pesticides management, and protecting natural resources http://www.ianr.unl.edu/pubs/browse.htm

Agricultural Management Practices to Reduce Atrazine in Surface Water http://ianrpubs.unl.edu/water/g1299.htm

Best Management Practices for Agricultural Pesticides to Protect Water Resources http://www.ianr.unl.edu/pubs/water/g1182.htm

Best Management Practices to Reduce Atrazine Runoff from Corn Fields in Nebraska http://ianrpubs.unl.edu/water/g1323.htm

Best Management Practices to Reduce Atrazine Runoff from Dryland Corn and Sorghum in South Central and Southeast Nebraska http://ianrpubs.unl.edu/water/nf322.htm

Best Management Practices to Reduce Atrazine Runoff from Irrigated Corn in South Central Nebraska http://ianrpubs.unl.edu/water/nf323.htm

Effects of Agricultural Runoff on Nebraska Water Quality http://www.ianr.unl.edu/pubs/water/g586.htm

EPA’s Endanger Species Program and county bulletins http://www.epa.gov/espp/nebraska/nebraska.htm

First Generation European Corn Borer Scouting and Treatment Decisions http://ianrpubs.unl.edu/insects/nf364.htm

Managing Irrigation and Nitrogen to Protect Water Quality http://waterquality.unl.edu/home.html

Nebraska Department of Agriculture's Pesticide Program http://www.agr.state.ne.us/division/bpi/pes/pest1.htm

Nebraska Farm*A*Syst http://fas.unl.edu/index.htm

Nebraska NRCS Agronomy Homepage http://www.ne.nrcs.usda.gov/technical/agronomy.html

Nebraska Weed Management Guide http://www.ianr.unl.edu/pubs/fieldcrops/ec130.htm

NRCS National Pest Management Website (includes access information for downloading WIN-PST): http://www.wcc.nrcs.usda.gov/pestmgt/

Pesticide Runoff & Water Quality in Nebraska, EC143 http://ianrpubs.unl.edu/water/

Safe Transport, Storage and Disposal of Pesticides http://www.ianr.unl.edu/pubs/pesticides/EC2507.pdf

Second Generation European Corn Borer Scouting and Treatment Decisions http://ianrpubs.unl.edu/insects/nf365.htm

The Worker Protection Standard http://www.agr.state.ne.us/division/bpi/pes/wps.htm

Understanding Pesticides and Water Quality in Nebraska, EC135 http://ianrpubs.unl.edu/water/

University of Nebraska's Pesticide Education Resources http://pested.unl.edu/

Vegetative Filter Strips in Agriculture http://ianrpubs.unl.edu/water/nf352.htm

Western Corn Rootworm Soil Insecticide Treatment Decisions Based on Beetle Numbers http://ianrpubs.unl.edu/insects/g774.htm